



PAPERS READ AT THE ADELAIDE PHILOSOPHICAL SOCIETY ON TUESDAY, JANUARY 21, 1873.

SUBJECTS—"TASMANIA;" "THE WEATHER;" "SPHEROGRAPH;" "GEOLOGICAL."

MR. TODD AND THE OVERLAND TELEGRAPH.

The CHAIRMAN (Mr. T. D. Smeaton, Vice-President), said that the gentlemen appointed to wait upon Mr. Todd took an early opportunity of asking him to meet the Society to give an account of his journey across the continent. He expressed himself as very willing, but up to the present time he had been unable to do so, because naturally he had first to report to the Government, and he had not yet furnished his official report, as some information he required was not to hand. When it was completed Mr. Todd would give the Society the promised evening.

SCIENTIFIC LITERATURE.

Mr. J. S. LLOYD, who acted as Secretary in the absence of Mr. C. W. Babbage through illness, reported the receipt of the *Journal of the Society of Arts* for June, July, and August, 1872.

TASMANIA.

Mr. LLOYD then read a paper, "A brief epitome of the History of the Island Colony of Tasmania and its Productions," by Mr. H. H. Hull a corresponding member of the Society resident in Tasmania. In introducing the subject, Mr. Hull referred to the discovery of Tasmania on the 24th November, 1642, by Tasman, who landed on the 1st December of that year. Captain Cook landed in Tasmania in Adventure Bay on the 10th March, 1773, so that for nearly 130 years after Tasman's visit the aboriginal savage (the lowest in the social scale of all the Australian blacks) roamed freely through its evergreen forests, or hunted the plentiful game on its broad green plains, the restless waves of the eternal ocean roared along its rocky coasts, and the seabird built its nest fearlessly in the basaltic pillars of Tasman's Head. Having referred to the early settlement of the colony and the difficulties encountered with the blacks, who were exceedingly numerous on the island and bloodthirsty, he spoke of the fearful position in which the settlement must have been during the earlier years of this century owing to the want of provisions, and mentioned that armed sentinels were stationed in the fields to protect the growing wheat, and settlers were limited by a garrison order to a price of £4 a bushel; that the issue of rations was reduced to the minimum, and that prisoners' slop clothing was issued to the settlers; that in 1809 the troops in Sydney revolted, and headed by their officers deposed Governor Bligh, whom they sent to the Derwent, under guard in H.M.S. Porpoise; that in 1810, 1,100

persons on Norfolk Island were removed to Tasmania as settlers; and that from this time to 1817 the colony appeared to have been almost stagnant. The war being over, numbers of officers of both services emigrated there, each receiving a grant of 2,560 acres of land, and becoming the pioneers of the social, moral, and intellectual progress in Tasmania. From 1819 to 1836 the colony went ahead, population increased, large areas were put under the plough. In this year Port Phillip began to attract large Tasmanian sheepholders, so that in the next seven years sheep to the value of half-a-million had been exported thither. In 1850 the extensive discovery of gold in Victoria led to a further exodus of settlers, no less than 34,000 leaving in two years for the gold-diggings. The year 1853 was the culminating year of the success of the colony, the exports amounting in value as follows:—Timber, £440,000; fruit, £153,000; grain, £315,000; in addition to the staple product—wool—to the value of £300,000 a year; making a total of £1,756,000 of exports and £2,273,000 of imports. There were a million and a quarter of coin and bullion in the Banks. The Imperial expenditure was £309,138, and they had 1,000 British troops, and throughout the colony there was evidence of prosperity. Things, however, changed, the Imperial expenditure being no longer required in consequence of the cessation of transportation. The labour market became badly supplied, farming did not pay, and a general stagnation came over all the Australian Colonies, in which Tasmania shared. Yet, notwithstanding great drawbacks, it might be said the colony at the present time (1873) possessed a beautiful climate; its whaling grounds were as rich as ever; gold was cropping up on every side in the quartz reefs; railways, tramways, and roads were daily opening up new country for cultivation or occupation; and there were 18,048 heads of families resident in the colony, whose landed and house possessions, being valued at £669,000 a year, represented a capital of £11,000,000. There were 22,000 horses, 101,000 horned cattle, 1,400,000 sheep, and 49,000 pigs, which put together were valued at £1,470,000. There were under cultivation 330,000 acres of land, and home produce to the value of £700,000 had been sent away during 1871; £380,000 had been deposited in the Banks, and 8,400 depositors had £220,000 in the Savings Banks. The shipping was valued

at £300,000, and the steamers at £100,000. One railway had been constructed at a cost of £510,000, and another had been contracted for at £650,000. The value of the grain and wheat crop exceeded £800,000. Having glanced at the valuable natural productions of Tasmania, the writer concluded with a reference to the climate, which, he remarked, was peculiarly suited to the Anglo-Saxon race, and instances of great longevity were numerous.

Upon the motion of Mr. INGLEYBY, seconded by Mr. F. G. WATERHOUSE, a cordial vote of thanks was passed to Mr. Hull.

THE WEATHER.

Mr. R. INGLEYBY read a short paper on this subject. He said—"In this paper I propose to affirm that there is a general sympathy of all meteorological phenomena throughout the globe, and that by studying the observations made in other and distant countries, and particularly in the opposite hemispheres true indications of the class of weather which may be expected in the approaching season at the place of the then observer may be gathered. During my residence in South Australia—a period extending over 20 years—I have taken an interest in gardening and plant culture, and have endeavoured to keep myself *au courant* with English progress by subscribing to some gardening periodical. My attention was soon attracted by the frequent occurrence of a general similarity in the class of weather being experienced at the time of observation with that of which I was then reading—a difference of four or five months. I have fitfully but carefully considered the subject from time to time to ascertain whether the phenomena in question were merely casual coincidences. It is in the very nature of things that coincidences should occur in such a subject as weather that I withheld my judgment until similar weather of a very pronounced character appeared in both hemispheres, so that the idea of the similarity being merely accidental must be discarded. This occurred in the year 1863, the final year of the disastrous drought. I need not quote meteorological returns to recall this fact to your memory. [The learned gentleman here read extracts from the *Gardeners Magazine* to shew that in 1863 weather of very similar character prevailed in England.] I propose on some future occasion to enter more fully into the statistical portion, but what I have just read will, I think, induce your attentive consideration

of the subject. It is strange that in the various works treating upon meteorology which have come under my notice I do not find any allusion to the existence of a sympathy of weather existing between distant parts of the globe, but I do hope this paper will be the means of drawing attention to a subject of such universal interest. Perhaps one great reason that meteorologists have neglected or refused to acknowledge such similarity of phenomena is because the late Sir John Herschell had so strongly affirmed the impossibility of forecasting the weather, and had ridiculed the idea of a person in his right senses altering his plans in 'the most trifling particular on the faith of any special prediction of a warm or a cold, or a wet or a dry, a calm or a stormy summer or winter.'"

The CHAIRMAN said that last year we had a very hot summer. It was the same in England, and the savans attributed it to an eruption of magnesium vapour on the surface of the sun. They saw remarks every now and then as to the weather on the telegraph line. He did not know whether any one had noticed any connection between it and the weather in Adelaide. In answer to Dr. Gosse, he said that the burning magnesium was observed by the spectroscopists.

Mr. C. BONNEY said that the discovery was made by an Italian.

Mr. F. S. CRAWFORD—Might not the heat have been caused by burning hydrogen? There were hydrogen clouds in height 60,000 miles.

Mr. J. HOSKING asked Mr. Ingleby if he meant that there was a sympathy between the weather in all countries.

Mr. INGLEBY—No. If there was a maximum of rain at any time east of the Australian Alps, there was a minimum on the other side. A person observing must find some place on the other hemisphere sympathizing with this part and then make his forecasts.

Mr. BONNEY said the difference of weather on each side of the Australian Alps was due to the prevailing winds.

Mr. GEORGE HAMILTON moved and Dr. GOSSE seconded a vote of thanks to Mr. Ingleby. Carried.

SPHEROGRAPH.

After some explanation by the Chairman, with the aid of diagrams, of the general principles upon which the instrument was constructed,

Captain LOUITT, of the St. Vincent, stated that he attended, at the invitation of the Chairman, to explain the use and working of the "Spherograph." He said that it had been a source of great trouble and anxiety to the mariner to find the exact variation or deviation in the compass caused by the magnetism of the ship's iron. By inattention to this question the voyage might be lengthened, there was greater wear and tear, great loss to the shipowner and Insurances Companies might occur, and in sailing along the land on a dark night the frequent result of not knowing the exact deviation or variance was the loss of a valuable ship and

cargo and of still more valuable lives. The spherograph was a representation of a globe upon a flat surface or hemispheric chart. There were three sets of lines—the azimuth lines, which met at the zenith and cut the horizon at right angles and measured on it; the hour lines met at the Poles and cut the Equator at right angles and measured on it; the latitude was counted from the Equator, and the declination is the latitude of the heavenly body, which was so many degrees north or south of the Equator. Messrs. Adkin, Cameron and John Burdwood, Staff Commander, had made inventions to lessen the calculations of the navigator, but Saxby's spherograph superseded them all by its extreme simplicity, extreme accuracy, and large capabilities. In using it there were only three things required—the apparent time of the ship, the latitude, and the declination of the heavenly body by which observations were being made. The Captain showed by an illustration that by the spherograph in a few seconds a true azimuth could be obtained, the difference between which and the magnetic bearing of the heavenly body gave the variation and deviation combined. Saxby had also arranged the spherograph to find the variation by the stars at night. On the revolving disc there were 22 or 23 stars marked according to declination and right ascension. On the outer edge of the revolving disc were marked the months and days. If the mariner wished to find how any star bore, he set the day of the month on the revolving disc opposite to the hour on the board, and where the right ascension of the star cut on the hour of the board it gave the right ascension of the star in time distant from the meridian. Then by comparing this time with the latitude of the ship and the declination of the star on the spherograph previously explained, was obtained the true bearing of the star at that time, the difference between which and the magnetic bearing of the star was the deviation and the variation of the compass. This was done in less time than was taken to describe it, with no calculation or figuring of any kind. The Captain then described the spherograph for great circle sailing, which showed the shortest route and distance between any two given places. This was also done in a few seconds, and without calculation. It was not, however, always practicable to follow this route, in consequence of icebergs and unfavourable winds, but a navigator or meteorologist when about to leave his port to undertake the voyage seemed to grasp in his mind's eye the route he ought to take to meet the most favourable winds at the season in which he started. Then by applying the great circle principle he was taught the shortest route through those localities. Meteorology taught him where he ought to go, and this great circle principle the shortest distance through those localities. Thus by the combination of the various branches of nautical science working hand in hand to the one grand point the mariner was enabled to make good passages, or at least

he had great advantages over the unscientific. The cost of the spherograph was small. It was invented about 15 years ago, and he was sorry it was not more in use. If once a navigator used it he would as soon put to sea without it as without his chronometer or sextant. In answer to Mr. F. G. Waterhouse, Captain Louitt said that he was not aware of the spherograph being used in nautical schools.

The CHAIRMAN saw no reason why it should not be used in schools by boys from 12 years of age.

Captain LOUITT then exhibited a star sextant, made to his order in London by Hughes, the optician, being the only one in existence, unless more had since been made by the same maker. It had great magnifying powers, and on ordinary nights he could find the horizon when it could not be seen by the naked eye. He had found it exceedingly accurate, and by it he could often get a star at night for observation when he had been unable to see the sun at mid-day.

Mr. R. INGLEBY moved, Mr. J. MACGEORGE seconded, and Mr. C. A. WILSON supported a motion for a vote of thanks to Captain Louitt.

This having been carried the CAPTAIN expressed the pleasure he would have in showing any of his instruments to members of the Society on his ship.

GEOLOGICAL.

Mr. F. G. WATERHOUSE exhibited a fine specimen of a fossil skeleton of a species of moa bird (*dinornis casuarinus*), found in the Canterbury settlement, New Zealand; also the leg bones of three other species—*dinornis gracilis*, *dinornis crassus*, and *dinornis giganteus*, the leg of which last species will convey some idea of the enormous size of the bird, the tibia alone measuring 2 ft. 10 in. in length. These interesting specimens of fossil remains, forming so valuable an addition to the Museum, had been obtained through the kind intercession of Mr. Saml. Glyde with his friend Dr. Julius Haast, the Director of the Canterbury Museum, who had informed him that he intended shortly to forward an entire skeleton of *dinornis elephantopus*, so named on account of its thick legs. He also stated that he hoped in a few months to procure for the Museum here a perfect skeleton of *dinornis giganteus*.

Mr. Waterhouse also showed Hochstetter's New Zealand *Epiornis* of Madagascar and smaller specimens of the Moa bird; *Leipoa ocellata*, native pheasant (taken from shell before birth to show the early maturity of plumage); the gigantic crab of Victoria the *Pseudocarcinus gigas*, lately received from the National Museum, Melbourne; and a stone axe-head found on a gold drift in New Zealand.

The Victorian crab measures over 4 ft. along the extended nippers. One nipper—that for crushing the food—is much larger than the other, which serves for feeding.

The meeting closed with thanks to the Chairman.

